IN THE CLAIMS:

This listing of the claim will replace all prior versions and listings of claim in the present application.

Listing of Claims

1. (currently amended)A packet transfer device that interworks a multiprotocol label switching (MPLS) network which uses a MPLS protocol, and a network that does not use said MPLS protocol, wherein:

in said MPLS network, packet switching is performed by a MPLS header which is added before a header of a layer corresponding to layer 3 of the Open System Interconnection (OSI) model, and

in a network which does not use said MPLS protocol, packet switching is performed by a header of the layer corresponding to layer 2 of the OSI model, which is different from said MPLS header and is added before said layer 3 header, and

wherein said packet transfer device comprises:

a first physical port which receives a packet that is transmitted from the network which does not use said MPLS protocol,

a second physical port for connecting with said MPLS network,

a memory that stores header transformation information that shows correspondence between a pair of information in said layer 2 header and information in said layer 3 header in correspondence with information in said MPLS header, and

a processor that searches said header transformation information and transforms said layer 2 header contained in a packet received from said first physical port to said MPLS header corresponding to said layer 2 header.

2. (previously presented)The packet transfer device recited in claim 1, wherein:

the information in said layer 2 header is information that identifies groups to which a transmission source and destination of a packet is transmitted from a network which does not use said MPLS protocol belong, and

the information in said MPLS header is a label value in said MPLS header.

3. (previously presented)A packet transfer device that interworks a multiprotocol label switching (MPLS) network which uses a MPLS protocol, and a network that does not use said MPLS protocol, wherein:

in said MPLS network, packet switching is performed by a MPLS header which is added before a header of a layer corresponding to layer 3 of the Open System Interconnection (OSI) model (layer 3 header), and

in the network which does not use said MPLS protocol, packet switching is performed by a header of a layer corresponding to layer 2 of the OSI model (layer 2 header), which is different from said MPLS header and is added before said layer 3 header, and

wherein said packet transfer device comprises:

a first physical port which receives a packet that is transmitted from the network which does not use said MPLS protocol,

a second physical port for connecting with said MPLS network,

a memory that stores header transformation information that shows correspondence between a pair of information in said layer 2 header and information in said layer 3 header in correspondence with information in said MPLS header, and

a processor that searches said header transformation information and transforms said layer 2 header contained in a packet received from said first physical port to said MPLS header corresponding to said layer 2 header,

wherein the information in said layer 2 header is information that identifies groups to which a transmission source and destination of a packet that is transmitted from a network which does not use said MPLS protocol belongs, and the information in said MPLS header is a label value in said MPLS header,

wherein:

a physical port number is assigned to said first physical port; and

said header transformation information shows correspondence between a group of said physical port number, the information that identifies the groups to which the transmission source and destination of a packet transmitted from a network which does not use said MPLS protocol belong and the information in said layer 3 header, and said label value.

4. (previously presented)A packet transfer device that interworks a multiprotocol label switching (MPLS) network which uses a MPLS protocol, and a network that does not use said MPLS protocol, wherein:

in said MPLS network, packet switch is performed by a MPLS header which is added before a header of a layer corresponding to layer 3 of the Open System Interconnection (OSI) model (layer 3 header), and

in the network which does not use said MPLS protocol, packet switching is performed by a header of a layer corresponding to layer 2 of the OSI model (layer 2

header), which is different from said MPLS header and is added before said layer 3 header, and

wherein said packet transfer device comprises:

a first physical port which receives a packet that is transmitted from the network which does not use said MPLS protocol,

a second physical port for connecting with said MPLS network,

a memory that stores header transformation information that shows correspondence between a pair of information in said layer 2 header and information in said layer 3 header in correspondence with information in said MPLS header, and

a processor that searches said header transformation information and transforms said layer 2 header contained in a packet received from said first physical port to said MPLS header corresponding to said layer 2 header,

wherein:

said layer 2 header and said MPLS header each contain packet priority information, and

a packet that is transferred in said MPLS network and a packet that is transferred in the network which does not use said MPLS protocol have, after said layer 3 header, a header of a layer that corresponds to layer 4 of the OSI model,

wherein said packet transfer device comprises:

a second memory that stores a pair of packet priority information in said layer 2 header and the information in said layer 3 header, a pair of packet priority information in said layer 2 header and the information in said layer 4 header or a group of the packet priority information in said layer 2 header and the information in

said layer 3 header, and the information in said layer 4 header in correspondence with said priority information in said MPLS header,

wherein said processor searches said priority transformation information and transforms said priority information in said layer 2 header contained in a packet received from said first physical port to said priority information in said MPLS header corresponding to said priority information in said layer 2 header.

5. (previously presented)A packet transfer device that interworks a multiprotocol label switching (MPLS) network which uses a multiprotocol label switching protocol and a network that does not use said MPLS protocol, wherein:

in said MPLS network, packet switch is performed by a MPLS header which is added before a header of the layer corresponding to layer 3 of the Open System Interconnection (OSI) model, and

in the network which does not use said MPLS protocol, packet switch is performed by a header of the layer corresponding to layer 2 of the OSI model, which is different from said MPLS header and is added before a header of the layer corresponding to layer 3 of the OSI model,

wherein said packet transfer device comprises:

a first physical port which receives a packet that is transmitted from said MPLS network,

a second physical port for connecting with the network which does not use said MPLS protocol,

a memory that stores header transformation information that shows correspondence between a pair of information of said MPLS header and the

information in said layer 3 header in correspondence with information in said layer 2 header; and

a processor that searches said header transformation information and transforms said layer 2 header contained in a packet received from said first physical port to said MPLS header corresponding to said layer 2 header.

6. (previously presented)The packet transfer device recited in claim 5, wherein:

the information in said MPLS header is a label value in said MPLS header; and

the information in said layer 2 header is information that identifies groups to which a transmission source and destination of a packet that is transmitted from a network which does not use said MPLS protocol belong.

7. (previously presented)A packet transfer device that interworks a multiprotocol label switching (MPLS) network which uses a MPLS protocol and a network that does not use said MPLS protocol, wherein:

in said MPLS network, packet switching is performed by a MPLS header which is added before a header of the layer corresponding to layer 3 of the Open System Interconnection (OSI) model, and

in a network which does not use said MPLS protocol, packet switching is performed by the header of the layer corresponding to layer 2 of the OSI model (layer 2 header), which is different from said MPLS header and is added before the header of the layer corresponding to layer 3 of the OSO model (layer 3 header),

wherein said packet transfer device comprises:

a first physical port which receives a packet that is transmitted from said MPLS network,

a second physical port for connecting with a network which does not use said MPLS protocol,

a memory that stores header transformation information that shows correspondence between a pair of information in said MPLS header and information in said layer 3 header in correspondence with information in said layer 2 header, and

a processor that searches said header transformation information and transforms said layer 2 header contained in a packet received from said first physical port to said MPLS header corresponding to said layer 2 header,

wherein:

the information in said MPLS header is a label value in said MPLS header, and

the information in said layer 2 header is information that identifies the groups to which a transmission source and destination of a packet that is transmitted from a network which does not use said MPLS protocol belong,

wherein:

a physical port number is assigned to said first physical port; and

said header transformation information shows the correspondence between a group of said physical port number, the value of said label and the information in said layer 3 header, and the information that identifies the group to which the transmission source and destination of a packet transmitted from a network which does not use said MPLS protocol belong.

8. (previously presented)The packet transfer device recited in claim 5, wherein:

said layer 2 header and said MPLS header each contain packet priority information, and

a packet that is transferred in said MPLS network and a packet that is transferred in a network which does not use said MPLS protocol have, after said layer 3 header, a header of a layer corresponding to layer 4 of the OSI model,

wherein said packet transfer device further comprises:

a second memory that stores a pair of packet priority information in said MPLS header and the information in said layer 3 header, a pair of packet priority information in said layer 2 header and the information in said layer 4 header, a group of packet priority information in said MPLS header, and the information in said layer 3 header, and the information in said layer 4 header in correspondence with said priority information in said layer 2 header,

wherein said processor searches said priority transformation information and transforms said priority information in said MPLS header contained in a packet received from said first physical port to said priority information in said layer 2 header corresponding to said priority information in said MPLS header.

9. (previously presented)The packet transfer device received in claim 8, wherein:

said MPLS header is a shim header; and

the priority information used in said MPLS network is set to a 3-bit Exp field defined in said shim header.

10. (previously presented)The packet transfer device received in claim 8, wherein:

said MPLS header is an asynchronous transfer mode (ATM) cell header, and

the priority information used in said MPLS network is set to a cell loss priority bit (CLP) field defined in said ATM cell header.

11. (previously presented)The packet transfer device recited in claim 6, wherein:

a tag control information field defined by IEEE 802.1Q is set in said layer 2 header; and

the information that identifies groups to which the transmission source and destination of a packet transmitted from a network which does not use said MPLS protocol belong is a VLAN ID that is set in said tag control information field.

12. (previously presented)The packet transfer device recited in claim 6, wherein:

a tag control information field defined by IEEE 802.1Q is set in said layer 2 header, and

the packet priority information in said layer 2 header is a user priority that is set in said tag control information field.

13. (previously presented)A packet transfer control method in a packet transfer device that interworks a multiprotocol label switching (MPLS) network which uses a MPLS protocol and a network that does not use said MPLS protocol, wherein:

in said MPLS network, packet switching is performed by a label in a MPLS header which is added before a header of a layer corresponding to layer 3 of the Open System Interconnection (OSI) model (layer 3 header);

in the network which does not use said MPLS protocol, packet switching is performed by a header of a layer corresponding to layer 2 of the OSI model "layer 2 header"), which is different from said MPLS header and is added before said layer 3 header; and

a plurality of logical networks that are identified by an identifier in said layer 2 header are configured in the network which does not use said MPLS protocol,

wherein said packet transfer control method comprises the steps of:

setting the correspondence between said identifier and said label in said packet transfer device,

determining to which network among said plurality of logical networks a received packet belongs, using said identifier in said layer 2 header that is added to a received packet, when the packet is received from the network which does not use said MPLS protocol,

checking said correspondence,

determining said label to be added to said received packet,

checking said correspondence when the packet is received from said MPLS network,

determining said identifier to be associated to said label added to said received packet is to be transmitted from said MPLS network.

14. (previously presented)A packet transfer control method in a packet transfer device that interworks a multiprotocol label switching (MPLS) network which uses multiprotocol label switching protocol and a network that does not use said MPLS protocol, wherein:

in said MPLS network, packet switching is performed by a label in the MPLS header which is added before a layer corresponding to the layer 3 of the Open System Interconnection (OSI) model (layer 3 header);

in the network which does not use said MPLS protocol, packet switching is performed by a header of a layer corresponding to layer 2 of the OSI model (layer 2 header), which is different from said MPLS header and is added before said layer 3 header; and

a plurality of logical networks that are identified by an identifier in said layer 2 header are configured in the network which does not use said MPLS protocol,

wherein said packet transfer control method comprises the steps of:

setting correspondence between said identifier and said label in said packet device,

determining to which network among said plurality of logical networks a received packet belongs, using said identifier in said layer 2 header that is added to the received packet, when the packet is received from the network which does not use said MPLS protocol,

checking said correspondence,

determining said label to be added to said received packet,

checking said correspondence when the packet is received from said MPLS network,

determining an identifier to be associated to said label added to said received packet in said MPLS network, and

determining to which network among said plurality of logical networks said received packet is to be transmitted from said MPLS network,

wherein:

said layer 2 header is a VLAN packet header defined by IEEE 802.1Q,

said identifier is a value that is set in the VLAN ID field, and

said layer 3 header is an Internet protocol (IP) header.

15. (previously presented)A packet transfer control method in a packet transfer device that interworks a multiprotocol label switching (MPLS) network which uses a MPLS protocol and a network that does not use said MPLS protocol, wherein:

in said MPLS network, packet switching is performed by a label in the MPLS header which is added before a header of a layer corresponding to the layer 3 of the Open System Interconnection (OSI) model (layer 3 header);

in the network which does not use said MPLS protocol, packet switching is performed by a header of a layer corresponding to layer 2 of the OSI model (layer 2 header), which is different from said MPLS header and is added before said layer 3 header; and

a plurality of logical networks that are identified by an identifier in said layer 2 header are configured in the network which does not use said MPLS protocol,

wherein said packet transfer control method comprises the steps of:

setting correspondence between said identifier and said label in said packet device,

determining to which network among said plurality of logical networks a received packet belongs, using said identifier in said layer 2 header that is added to the received packet, when the packet is received from the network which does not use said MPLS protocol,

checking said correspondence,

determining said label to be added to said received packet;

checking said correspondence when the packet is received from said MPLS network,

determining an identifier to be associated to said label added to said received packet in said MPLS network, and

determining to which network among said plurality of logical networks said received packet is to be transmitted from said MPLS network,

wherein:

said layer 2 header contains priority information for packet transfer in the network which does not use said MPLS protocol; and

said MPLS header contains priority information for packet transfer in said MPLS network,

wherein said packet transfer control method further comprises the step of:

transforming said priority information in said layer 2 header to said priority information in said MPLS header.

16. (previously presented)The packet transfer control method recited in claim 15, wherein:

said layer 2 header is a VLAN packet header defined by IEEE 802.1Q;

said priority information in said layer 2 header is a value that is set in an user priority field;

said MPLS header is a shim header; and

priority information in said MPLS header is a value of the 3-bit Exp field.

17. (previously presented)The packet transfer control method recited in claim 15, wherein:

said layer 2 header is a VLAN packet header defined by IEEE 802.1Q;

said priority information in said layer 2 header is a value that is set in an user priority field,

said MPLS header is an ATM cell header; and

priority information in said MPLS header is the value of a cell loss priority bit (CLP) field.

18. (previously presented)The packet transfer control method recited in claim 16, wherein said layer 3 header is an Internet protocol (IP) header.

19. (previously presented)A setup method for a packet transfer device that interworks a multi protocol label switching (MPLS) network in which packet switching is performed by the MPLS header and a network in which packet switching is performed by a VLAN packet header defined by IEEE 802.1Q, wherein:

said MPLS header possesses a label that is the connection identifier of said MPLS network, and the priority information for the packet transfer in said MPLS network,

wherein said method comprising the steps of:

setting the correspondence between the value to be set to the VLAN ID field in said VLAN packet header and the label in said MPLS header, and

setting the correspondence between the value to be set to the user priority field in said VLAN packet header and said priority information in said MPLS header.